

# Role of Gadolinium-Enhanced MRI in Enhancing Ultrasound-Based Cardiac Assessment

Asha Thomas<sup>1</sup> and Dr. Yogesh<sup>2</sup>

<sup>1</sup>Research Scholar, Department of Computer Science and Application

<sup>2</sup>Assistant Professor, Department of Computer Science and Application  
NIILM University, Kaithal (Haryana)

**Abstract:** *The integration of Gadolinium-enhanced Magnetic Resonance Imaging with cardiac ultrasound represents a significant step forward in multimodal cardiac imaging. This review explores how Gd-enhanced MRI augments ultrasound-based cardiac assessment, particularly in detecting myocardial fibrosis, wall hypertrophy, and perfusion abnormalities. While ultrasound offers real-time dynamic imaging and cost-effectiveness, MRI provides superior tissue contrast and structural delineation. The fusion of these modalities enables accurate quantification of myocardial mass, ejection fraction, and fibrosis mapping, crucial for diagnosing complex cardiac pathologies such as Hypertrophic Cardiomyopathy.*

**Keywords:** Gadolinium-Enhanced MRI, Echocardiography, Multimodal Imaging